IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: **YASUMURA, Takashi et al.**

Group Art Unit: **1712**

Serial No.: **10/073,926**

Examiner: **Patricia A. Short**

Filed: **February 14, 2002**

P.T.O. Confirmation No.: 5329

For: **COMPATIBILIZING AGENT, RADICAL COPOLYMERIZABLE UNSATURATED RESIN COMPOSITION, MOLDING MATERIAL, AND MOLDED ARTICLE**

SUBMISSION OF DECLARATION UNDER 37 CFR 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

March 1, 2004

Sir:

The attached Declaration under 37 CFR 1.132 is submitted in conjunction with the co-filed Amendment Accompanying RCE and the Request for Continued Examination. This Declaration is a true copy of the declaration originally filed on August 8, 2002, in the parent application, USSN 09/712,161, as indicated in the header of the declaration.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP

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PATENT TRADEMARK OFFICE

Attachment: Declaration under 37 CFR 1.132 originally filed in USSN 09/712,161

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:
Takashi YASUMURA et al.
Application No.: 09/712,161 Group Art Unit: 1712
Filed: November 15, 2000 Examiner: SHORT, PATRICIA A.
For: COMPATIBILIZING AGENT, RADICAL COPOLYMERIZABLE UNSATURATED RESIN COMPOSITION, MOLDING MATERIAL, AND MOLDED ARTICLE

DECLARATION UNDER 37 CFR §1.132

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

Sir:

I, Takashi Yasumura, hereby declare and state that:

1. I am a citizen of Japan, residing at 10-99-107, Tsuruyamadai 3-chome, Izumi-shi, Osaka, Japan.

2. I am one of the inventors of the subject application, and I am fully familiar with the subject matter thereof as well as the references relied upon by the Examiner in the prosecution of this application.

3. I obtained a Bachelor of Engineering degree in polymer science from Nagoya Institute of Technology in 1989.

4. I am currently employed by Dainippon Ink and Chemicals,

Inc., and began working for Dainippon Ink and Chemicals, Inc., in 1990, where I have engaged in research and development in the Unsaturated Polyester Group.

5. I conducted the following experiments in order to compare the compatibilizing agent according to the present invention with the graft copolymer used in Hoene et al. (U.S. Patent No. 4,172,102).

(In the following experiments, parts are by weight unless otherwise stated.)

PREPARATION OF COMPATIBILIZING AGENT (GRAFT COPOLYMER (A)) OF THE INVENTION

Synthesis Example 24 (Synthesis of Compatibilizing Agent)

In the same manner as in Synthesis Example 1 in the specification of the present application, 200 g of xylene, 224 g of styrene, 126 g of monomethoxy-polyethylene oxide-monomethacrylate with a polyether chain having a number-average molecular weight of 4,000 as a macromonomer and 2.0 g of AIBN, as raw materials, were subjected to addition polymerization to obtain a desired graft copolymer (A). Then, in the same manner as in Synthesis Example 1, 440 g of styrene and 0.1 g of hydroquinone were added thereto to obtain a compatibilizing agent solution having an active component of 35% by weight, which is taken as a compatibilizing agent solution SE-13. The number-average molecular weight measured by GPC of the resulting polymer (A) was 11,200.

Synthesis Example 25 (Synthesis of Compatibilizing Agent)

In the same manner as in Synthesis Example 1 in the specification of the present application, 200 g of xylene,

140 g of styrene, 210 g of monomethoxy-polyethylene oxide-monomethacrylate with a polyether chain having a number-average molecular weight of 4,000 as a macromonomer and 1.8 g of AIBN, as raw materials, were subjected to addition polymerization to obtain a desired graft copolymer (A). Then, in the same manner as in Synthesis Example 1, 440 g of styrene and 0.1 g of hydroquinone were added thereto to obtain a compatibilizing agent solution having an active component of 35% by weight, which is taken as a compatibilizing agent solution SE-14. The number-average molecular weight measured by GPC of the resulting polymer (A) was 12,000.

Synthesis Example 26 (Synthesis of Comparative Compatibilizing Agent Corresponding to the Graft Copolymer Disclosed in Hoene et al.)

In the same manner as in Synthesis Example 1 in the specification of the present application, using 200 g of xylene, 245 g of styrene, 105 g of monomethoxy-polyethylene oxide-monomethacrylate with a polyether chain having a number-average molecular weight of 4000 as a macromonomer and 2.0 g of AIBN, as raw materials, were subjected to addition polymerization to obtain a comparative graft copolymer (A). Then, in the same manner as in Synthesis Example 1, 440 g of styrene and 0.1 g of hydroquinone were added thereto to obtain a comparative compatibilizing agent solution having a solid content of 35% by weight, which is taken as a compatibilizing agent solution SE-15. The number-average molecular weight measured by GPC of the resulting polymer was 12,300.

PREPARATION OF RESIN COMPOSITION AND EVALUATION OF MIXING STABILITY

Example 23

In a 200 cc glass bottle, 76 parts of unsaturated resin solution (VP-1) obtained in Synthesis Example 18 in the specification of the present application, 20 parts of low profile additive solution (LP-1) obtained in Synthesis Example 13 in the specification of the present application, 4 parts of styrene and 3 parts of compatibilizing agent solution (SE-1) obtained in Synthesis Example 1 in the specification of the present application (an active component of about 1 part) were charged, and then mixed in a stirrer at 2500 rpm for five minutes to obtain a resin mixed solution (resin composition).

The resulting resin mixed solution was allowed to stand at 40°C in oven, and dispersion stability was visually evaluated. The time and day required to separation were evaluated by six-rank criteria. The state where the phase was separated up to the height of about 2 mm or higher when observed from the side during storage in the above container was taken as a time required to separation.

Evaluation of Compatibility at 40°C

1: After standing, separation occurred within 4 hours.
2: After standing, separation occurred during a period not less than 4 hours and less than 12 hours.
3: After standing, separation occurred during 12 hours or more and less than 24 hours.
4: After standing, separation occurred during 24 hours or more and less than 10 days.
5: After mixing, separation occurred during 10 days or more and less than 30 days.
6: After mixing, no separation occurred during 30 days or

more, and stable.

The results are shown in Table 8.

The composition obtained in Example 23 showed a dispersion stability of 6 and was stable during one month or more.

Examples 24 and 25

In the same manner as in Example 23, except that the compatibilizing agent solution was changed to SE-13 and 14 obtained in Synthesis Examples 24 and 25 respectively, resin compositions were prepared. The stability of the solutions was evaluated in the same manner as in Example 23. The results are shown in Table 8.

Comparative Example 15

In the same manner as in Example 1 in the specification of the present application, except that the compatibilizing agent solution was changed to SE-15 obtained in Synthesis Example 26, a resin composition was prepared. The stability of the solution was evaluated in the same manner as in Example 23. The results are summarized in Table 8.

Table 8

Items		Examples			Comp. Example
		23	24	25	15
Components	Compatibilizing agent (A) solution	SE-1	SE-13	SE-14	SE-15
	Side chain (A2)	PEO4000	PEO4000	PEO4000	PEO4000
	Principal chain (A1)	SM	SM	SM	SM
	Weight ratio A1/A2	61/39	65/35	41/59	71/29
	Unsaturated resin solution	VP-1 UP	VP-1 UP	VP-1 UP	VP-1 UP
	Low profile additive solution	LP-1 PS	LP-1 PS	LP-1 PS	LP-1 PS
Evaluation	Resin solution stability at 40° C (Days required to separation)	6	5	5	3
		>30	23	26	1

Description of abbreviations used in Table 8

SM: Styrene

PEO: Polyethylene oxide

PS: Polystyrene

UP: Unsaturated polyester resin

As is apparent from the results described in Table 8, a high compatibilizing effect can be obtained in any of Examples 23 to 25 using the compatibilizing agent solutions SE-1, 13 and 14 which satisfy the conditions of the present invention, and separation of the resin solutions hardly occurred. On the other hand, in the case of Comparative Example 15 using the compatibilizing agent solution SE-15 which does not satisfy the conditions of the present invention, a sufficient compatibilizing effect could not be obtained, and phase separation occurred within one day at 40° C.

6. I understand fully the content of this declaration.

7. The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

8. Further declarant saith not.

Takashi Yasumura

Takashi Yasumura

July 23, 2007

Date